

WHAT IS CLAIMED IS:

1 1. A method for decoding a bitstream of reversible
2 variable length codewords comprising the steps of:
3 parsing the bitstream to extract a next reversible
4 variable length codeword;
5 transcoding each extracted reversible variable length
6 codeword into a pseudo-variable length codeword without
7 complete decoding of the extracted reversible variable length
8 codeword; and
9 decoding each transcoded pseudo-variable length codeword.

1 2. The method of claim 1, wherein:
2 said step of transcoding produces at least some pseudo-
3 variable length code words suitable for leading zero lookup
4 table decoding; and
5 said step of decoding employs leading zero detection for
6 selection of a corresponding lookup table of the pseudo-
7 variable length code words suitable for leading zero lookup
8 table decoding.

1 3. The method of claim 1, wherein:
2 said step of transcoding includes
3 detection of whether the extracted reversible
4 variable length codeword has an initial "1" or an initial
5 "0",
6 performing a first type transcoding if the extracted
7 reversible variable length codeword has an initial "0",

8 performing a second type transcoding different from
9 the first type transcoding if the extracted reversible
10 variable length codeword has an initial "1";
11 said step of decoding employs a first set of at least one
12 lookup table for pseudo-variable length codes words resulting
13 from the first type transcoding and a second set of at least
14 one lookup table different from the first set for pseudo-
15 variable length codes words resulting from the second type
16 transcoding.

1 4. The method of claim 3, wherein:
2 the reversible variable length code includes a variable
3 length code portion and a fixed length code portion;
4 said first type transcoding includes forming the pseudo-
5 variable length code by concatenating
6 a first portion corresponding to a position of a
7 third "0" within the reversible variable length code,
8 a second portion corresponding to a position of a
9 second "0" within the reversible variable length code,
10 and
11 a third portion corresponding to the fixed length
12 code of the reversible variable length code.

1 5. The method of claim 4, wherein:
2 the first portion corresponding to a position of a third
3 "0" within the reversible variable length code consists of
4 a number of leading "0s" equal to the difference of
5 a constant minus the position of the third "0" within the
6 reversible variable length code,
7 followed by a "1".

1 6. The method of claim 5, wherein:
2 the constant is 14.

1 7. The method of claim 5, wherein:
2 the constant is 15.

1 8. The method of claim 4, wherein:
2 a number of bits allocated to indication of the position
3 of the second "0" of the second portion of the first type
4 transcoding depends upon the position of the third "0" with
5 fewer bits allocated to indication of the position of the
6 second "0" when the position of the third "0" is smaller.

1 9. The method of claim 4, wherein:
2 the second portion of the first type transcoding is a
3 binary number indicating the position of the second zero
4 within the reversible variable length code.

1 10. The method of claim 4, wherein:
2 the second portion of the first type transcoding is a
3 binary number indicating the position of the second zero
4 within the reversible variable length code normalized wherein
5 a second bit position of the second zero is indicated by the
6 number zero.

1 11. The method of claim 4, wherein:
2 said fixed length code of the reversible variable length
3 code consists of 2 bits; and
4 said third portion consists of a first bit of the fixed
5 length code of the reversible variable length code.

1 12. The method of claim 3, wherein:
2 the reversible variable length code includes a variable
3 length code portion and a fixed length code portion;
4 said second type transcoding includes forming the pseudo-
5 variable length code by concatenating
6 a first portion including a number of leading "0s"
7 corresponding to a number of "0" in the variable length
8 code portion of the reversible variable length code
9 followed by "1", and
10 a second portion corresponding to the fixed length
11 code.

1 13. The method of claim 12, wherein:
2 said fixed length code of the reversible variable length
3 code consists of 2 bits; and
4 said second portion consists of a first bit of the fixed
5 length code of the reversible variable length code.

1 14. The method of claim 3, wherein:
2 the reversible variable length code includes a variable
3 length code portion and a fixed length code portion;
4 said second type transcoding includes forming the pseudo-
5 variable length code by concatenating
6 a first portion consisting of a "1",
7 a second portion consisting of a fixed number of
8 bits indicating a position of a second "1" in the
9 variable length portion of the reversible variable length
10 code, and
11 a third portion corresponding to the fixed length
12 code.

1 15. The method of claim 14, wherein:
2 said fixed number of bits of the second portion consists
3 of 4 bits.

1 16. The method of claim 14, wherein:
2 said fixed length code of the reversible variable length
3 code consists of 2 bits; and
4 said second portion consists of a first bit of the fixed
5 length code of the reversible variable length code.

1 17. The method of claim 1, wherein:
2 said step of transcoding each extracted reversible
3 variable length codeword into a pseudo-variable length
4 codeword includes transcoding a batch of a plurality of
5 extracted reversible variable length codes and storing the
6 pseudo-variable length codewords before decoding a first of
7 the extracted reversible variable length codewords; and
8 said step of decoding each transcoded pseudo-variable
9 length codeword includes recalling a batch of stored pseudo-
10 variable length codewords and decoding the batch of recalled
11 pseudo-variable length codewords before transcoding a next
12 reversible variable length codeword.